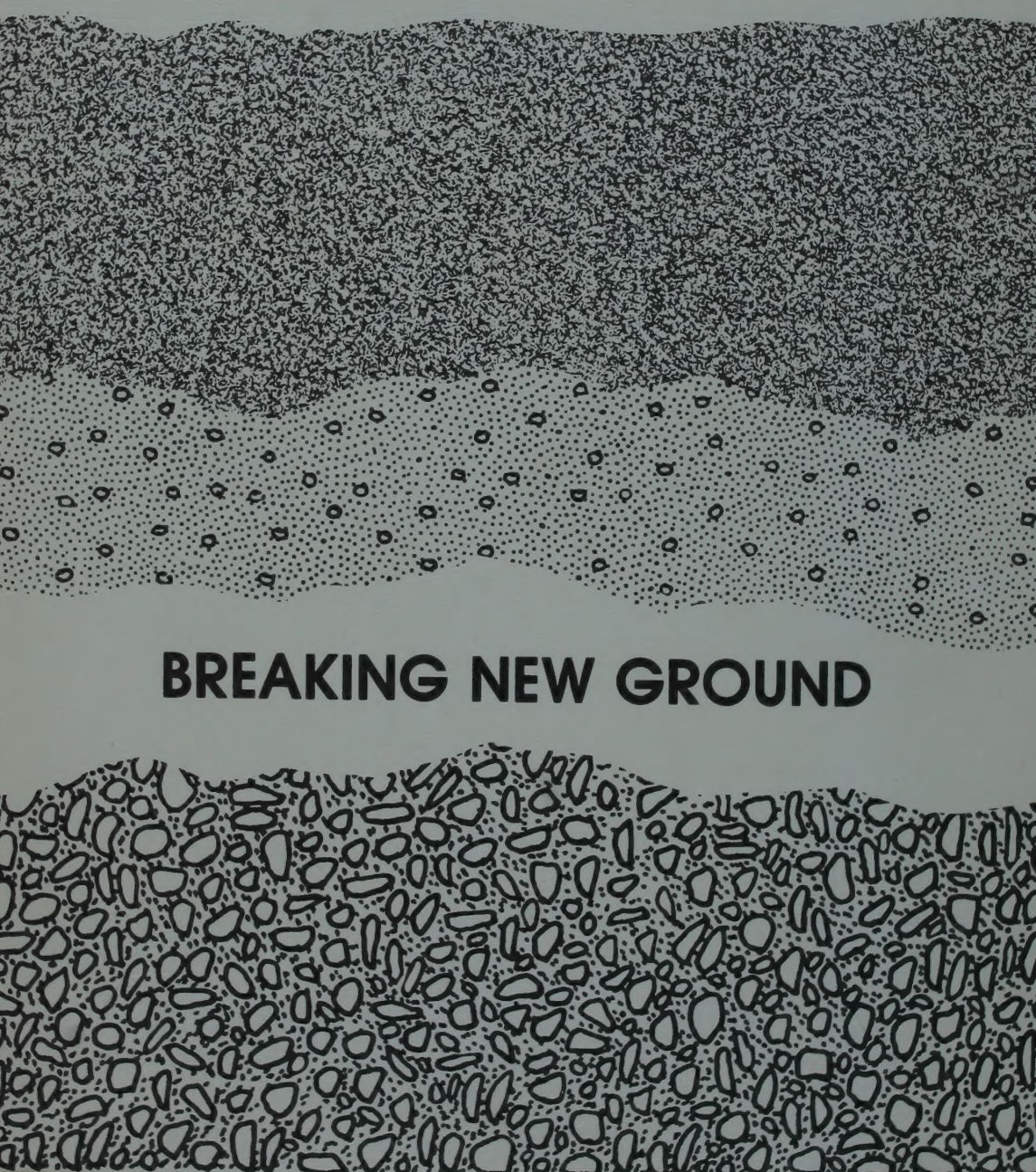


THE N.W.T. MINING INDUSTRY



BREAKING NEW GROUND

**NWT
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of Mines**

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LEADING THE WAY

Mining has been integral part of northern exploration and development since 1576 when Martin Frobisher mined 1,000 tons of fool's gold to take back to England. In 1772, Samuel Hearne made his overland trek from Fort Churchill on Hudson Bay to Coppermine looking for occurrences of native copper.

The mining industry has come a long way in 400 years making substantial contributions to northern development, to the Canadian economy and the development of new technology and transportation systems.

Mining and aviation go hand in hand in northern Canada. Mining claims were isolated, cut off from the outside world by expanses of bush and water. Prospectors and miners relied on this emerging technology to get to their claims and develop their mines. Pilots flew the early prospectors north to the bush and on to the barrens. They then ferried equipment in to develop the first mines. Cominco's Air Services Arm was a key factor in developing Yellowknife's Con Mine in the 1930s.

The Canadian aviation industry grew as it responded to the demands of miners and prospectors for more rugged, versatile bush planes capable of hauling larger loads and landing on shorter strips. Fairchilds, Puss Moths, Bellancas, Beavers, Otters, the venerable old DC-3s, and now the Hercules all contributed to the building of the mining industry. The Bristol Freighter ferried in bulldozers and supplies for Discovery Mine in the 1960s. Hercules aircraft delivered much of the material and equipment for Lupin mine in the 1980s.

Eldorado Nuclear's Port Radium mine on Great Bear Lake relied on both aviation and marine transportation to support its operation. The marine barging operation became the Crown-owned Northern Transportation Company Ltd. This company now resupplies isolated N.W.T. communities with their fuel, groceries and building materials every summer. Eldorado Aviation pioneered large-scale air freighting operations in the N.W.T.

Winter 'cat' trains resupplied Yellowknife from Grimshaw, Alberta in the 1940's. These convoys cut through the bush bringing supplies North. This route eventually became the Mackenzie Highway.

Mines such as Tundra, Echo Bay and Terra had to be resupplied in winter. Truckers developed the technique of building temporary ice roads. They ploughed routes across frozen lakes, and freight convoys snaked their way through miles of bush to isolated communities, mines and exploration sites.

When industry began opening mines in the High Arctic, Canada's shipping industry built a special, ice-strengthened freighter to haul the first lead-zinc out of Nanisivik Mine on Baffin Island. This freighter, the M.V. Arctic, is now also used to carry concentrate from Polaris as well as to haul the first High Arctic crude oil south from Cameron Island. Cominco engineers took a novel approach with the Polaris development when they built the concentrator on a barge in Quebec and towed the building north. It was then moored at the minesite.

Small deposits, such as Camlaren, were economically mined by bringing in portable mills which were removed when the work was done.

Mines fostered the growth of northern communities. Pine Point is a thriving mining community on the south shore of Great Slave Lake, and Nanisivik, on Baffin Island, is a new community built specifically for the mine. Government planners chose Yellowknife as the capital of the N.W.T. in 1967 because they felt the presence of the two operating gold mines would offset a growing government presence. The planners didn't want to build a town based on government alone.

Con Mine provided the first electrical power to Yellowknife from its own hydro station on the Yellowknife River. The first doctor in town, Dr. Ollie Stanton after whom Stanton Yellowknife Hospital is named, was the company doctor.

The mining industry contributes to our northern society in many different ways -some obvious, others not so apparent. Each development adds a little more to our knowledge in science, technology, transportation and to our economy and human resources.

MINERALS; WE'RE MORE THAN JUST ROCKS

BERYLLIUM, TANTALUM AND THE RARE EARTHS are a group of elements used mostly in high technology applications. These elements are combined with other metals to give special properties to the resulting alloy. Beryllium, for instance, is combined with copper to create corrosion resistant pipe valves and electrical connectors. Gallium arsenide is used to make computer chips which are faster and more powerful than silicon chips. Yttrium, Neodymium, Samarium and Gadolinium are the most common of the long list of exotic names which make up the Rare Earths group.

CADMIUM — a by-product of lead-zinc ore, is most often used in small batteries that power your wristwatch, calculator or camera. The mineral is also used in paints and lubricants, as a plastics stabilizer and as a coating on other metals to prevent corrosion.

COPPER — is a very common element in the earth's crust. Its easy malleability made it one of the first metals to be mined and worked by early man. Copper is used in electrical wiring and connectors because of its ability to conduct electricity easily. And copper is used in kitchenware because of its ability to conduct heat evenly. Copper is also combined with other metals to form alloys

such as bronze or brass which are used in bearings, bushings and even sculptures.

GOLD — has always been the most sought after of all precious metals. People most often encounter gold in jewellery and coins. In addition to its monetary and trading value, gold is used as a plating for electrical connectors in computers and high technology applications. A thin gold plating is sometimes put on office building windows as a solar insulator.

LEAD — is one of the commonest elements and also one of the densest. This latter quality makes lead a good safety shield from medical x-rays. Its most common uses are in batteries, fishing line sinkers, bullets and gasoline anti-knock compounds. Pewter, once commonly used for household plates and utensils, is an alloy of tin and lead.

SILVER — another precious metal widely used in jewellery and coins, has many industrial applications. It is an important component of photographic film and paper, solders, machine bearings and mirrors. It too is used in computer and telecommunications electrical connectors.

TUNGSTEN — is used in alloys to harden steel for drill bits and machine tools and in filaments for incandescent light bulbs. The extra-durability of this alloy-tungsten provides heat and wear resistance - makes it ideal as the cutting edge for saw blades.

URANIUM — is the fuel for nuclear powered electrical generating stations around the world. It is the active ingredient to produce x-rays, whether they be used in medicine, dentistry or to find minute cracks in aircraft frames. Small quantities of uranium are used to manufacture medical isotopes, creating luminescent paints and coloring glass. Uranium is not being mined in the N.W.T. although several large deposits have been found.

ZINC — the most plentiful mineral mined in the N.W.T., has a wide variety of uses such as weather resistant coatings for nails and structural steel, as a component in fertilizers and pesticides, and in rubber compounds. Zinc also has medical uses. It is the active ingredient in a salve to cure babies' diaper rash.

MINES; WHERE WE OPERATE

CANTUNG — This mine on the N.W.T.-Yukon border is Canada's principal producer of tungsten. Canada Tungsten Mining Corporation opened this property for production in 1961. Initially, open pit mining was used to recover the ore. Underground production began in 1974.

CON MINE — The Con claims were staked during the Yellowknife mining rush in the 1930s. Cominco Ltd. poured their first gold brick in 1938. Fifty years later, Con has just deepened its main shaft to gain access to ore more than 1,600 metres below the surface. The modern, 80 metre-high Robertson shaft is an area landmark.

CULLATON LAKE — This property was the only gold mine in the N.W.T.'s Keewatin region. Cullaton, owned now by Royex Gold Mining Corporation, began production in January, 1983. However, development operations were suspended in 1985 pending higher gold prices.

GIANT YELLOWKNIFE — Giant was the first mine staked during the Yellowknife mining rush, but it didn't produce its first gold brick until 1948. The company, a

member of the Falconbridge group, has switched much of its production from underground to open pit operations in recent years.

LUPIN — Echo Bay Mines, the third largest gold producer in Canada, began production on the shores of Contwoyto Lake near the Arctic Circle in 1981. All equipment and supplies to build and operate the mine were flown in by Hercules aircraft or trucked in by winter ice road.

NANISIVIK — This lead-zinc producer is located on the north end of Baffin Island. Engineers had to develop unique approaches to mining and building a townsite on permafrost. Nanisivik began production in 1976. Concentrate is stockpiled during the winter and shipped out by sea in summer. Mineral Resources International is the majority owner; the federal government holds an interest in this mine.

PINE POINT — Cominco Ltd.'s Pine Point lead-zinc mine on the south shore of Great Slave Lake is the world's largest open pit base metal mine. Prospectors heading to

the Klondike via the Mackenzie River during the 1890's first found indications of an attractive metal deposit. It wasn't until 1964 that the mine began production.

POLARIS — Cominco Ltd. operates the world's most northerly zinc-lead mine on Little Cornwallis Island. Geologists discovered mineralization in 1960; the Polaris deposit was found in 1971 and the mine began production in 1981.

SALMITA — Giant Yellowknife reactivated this former gold mine, located 250 km north of Yellowknife, and began production in 1983. Giant uses the mill at the old Tundra minesite, 5 km away from Salmita, to process the ore.

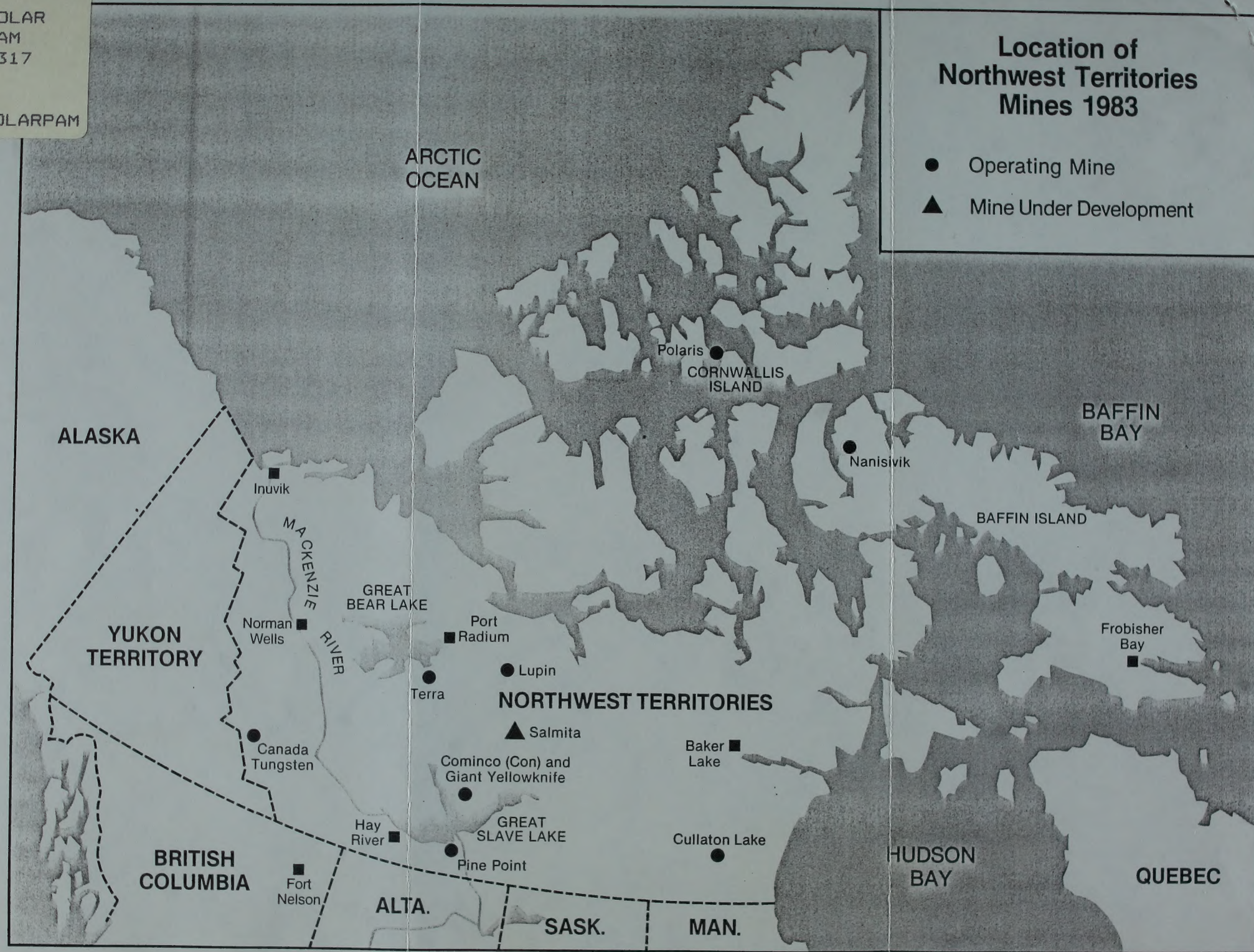
TERRA — The N.W.T.'s only silver mines are located on the southeast shore of Great Bear Lake. The mineral potential had been recognized in the 1920s but it wasn't until 1969 that the mine began production. Mining operations have been temporarily suspended by Terra Mines Ltd. pending higher silver prices.

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Location of Northwest Territories Mines 1983

- Operating Mine
- ▲ Mine Under Development



The N.W.T. mining industry is the major non-government contributor to the northern economy. It employs more than 2,400 full-time workers. The industry, between the eight producing mines and the exploration sector, pays more than \$120 million in wages and salaries a year.

Mining companies spend an average of \$215 million a year purchasing materials, supplies, equipment, transportation and other services. At least \$25 million is spent annually on locally-supplied goods and services, contributing significantly to the northern economy. More than 75 per cent of all mine employees are northern residents.

The mining industry contributes over \$40 million a year to governments and their agencies through income and property taxes, mineral lease payments and royalties, business licences and municipal taxes.

Mining exploration companies spend an average of \$40 million a year in the N.W.T. pursuing and developing new mineral discoveries. It could take anywhere from five to 20 years from the time a claim is staked on a successful discovery to the beginning of production for a mine.

Canadian ownership of N.W.T. mines range from 20 to 90 per cent. Most northern mines are majority Canadian-owned. The shares issued on operating mines are worth more than one half billion dollars and Canadians own more than half of these shares.

Technology developed while tackling new mining or transportation problems posed by severe climate or geography frequently becomes a marketable export item.

N.W.T. mines produced more than \$600 million worth of metallic minerals in 1984. That's almost eight per cent of the value of all metals produced in Canada. Principle products are lead (30 per cent of Canadian production), zinc (24 per cent), gold (12 per cent), silver (six per cent) and tungsten (more than 95 per cent). The mines produce smaller amounts of copper, cadmium and arsenic trioxide as by-products of the main mining operations.

MINERAL PRODUCTION AND EXPORTS

	N.W.T. 1984	Canada 1984	Canada Exports 1984
Copper	\$149,000	712,000 t \$1,351,373,000	687,787 t \$1,066,581,000
Gold	12,586 kg \$190,037,000	81,316 kg \$1,227,847,000	130,129 kg \$1,946,664,000
Silver	50 t \$17,564,000	1,171 t \$409,262,000	1,503 t \$466,718,000
Lead	88,000 t \$65,003,000	259,000 t \$190,842,000	202,547 t \$100,594,000
Zinc	245,000 t \$345,217,000	1,022,000 t \$1,438,030,000	1,088,755 t \$945,096,000

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Most successful mines were originally staked by independent prospectors, not by large companies.

The odds are less than one thousand to one that a good mineral showing will eventually develop into a producing mine.

Most mining exploration funds are now channelled into the search for gold. Most exploration work in the late 1970s was concentrated on finding uranium deposits.

The only known occurrences of placer gold in the N.W.T. are found on the Liard and Flat Rivers in the Mackenzie Mountains.

Exploration companies have looked for diamonds in the N.W.T. near Pond Inlet and in the Mackenzie Mountains.

Two of the earliest visitors to Baker Lake were William Christopher and Moses Norton in 1762. These Hudson's Bay Company employees were exploring for minerals, furs and the elusive Northwest Passage. The Hudson's Bay Company sent several expeditions up the west coast of the Bay searching for occurrences of native copper.

Robert Kinnes was mining mica near Lake Harbour in 1909. The earliest N.W.T. mine was a mica and graphite mine at Niantic Harbour on Cumberland Sound which began producing in 1876.

In 1910, three expeditions set sail from Newfoundland in search of rumored placer gold deposits on northern Baffin Island. None found any trace of gold, and one expedition was shipwrecked only to be rescued by the competition.

Canadian Indians and Inuit used and traded copper implements long before the first recorded discovery of copper by explorers in Canada. Yellowknife was named after the tribe of Yellowknife Indians in the area, so named for their copper knives.

Gilbert Labine's radium discovery in 1930 on Great Bear Lake led to the development of Canada's first radium-uranium mine. The Port Radium mine was turned into a crown corporation, Eldorado Nuclear, during the last war, and uranium from here was used in initial nuclear research. Later, Echo Bay Mines reactivated the property as a silver producer.

One of Canada's Group of Seven artists, A.Y. Jackson, and fellow artist, M. Haycock, gave art lessons at the Eldorado Mine on Great Bear Lake in 1939.

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